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| 10/750,075 | 12/31/2003 | Louis Lippincott | ITL.1703US (P17498) | 2083 |

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TROP, PRUNER & HU, P.C.
1616 S. VOSS ROAD, SUITE 750
HOUSTON, TX 77057-2631

| EXAMINER | |
|---|---|
| ANYIKIRE, CHIKAODILI E | |

| ART UNIT | PAPER NUMBER |
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| 2621 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/750,075 | LIPPINCOTT ET AL. | |
| | Examiner | Art Unit | |
| | CHIKAODILI E. ANYIKIRE | 2621 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 May 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-3, 5-17, and 23-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-17 and 23-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 September 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. This application is responsive to application number (10750075) filed on December 31, 2003. Claims 1-3, 5-17, and 23-26 are pending and have been examined.

### *Continued Examination Under 37 CFR 1.114*

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 19, 2010 has been entered.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 1 recites the limitation "the circuitry" in line 6. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 26 rejected under 35 U.S.C. 102(b) as being anticipated by Lin (US 6,421,466).

As per **claim 1**, Lin discloses a method, comprising:

determining a sum of absolute differences between pixels values from a reference block a first frame and a corresponding values from a second frame in a search window (column 5 lines 45 -50 and column 6 lines 52-55);

identifying a macroblock in the second frame with the lowest sum of absolute differences (column 7 lines 7-9); and

using less than all the bits of the pixels values to determine the sum of absolute differences to reduce the size of the circuitry needed to perform the sum of absolute differences determination (column 5 lines 45 – 50 and column 5 lines 65 - column 6 lines 3).

Regarding **claim 26**, arguments are analogous to those presented for claim 1 in are applicable for claim 26.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 2-3, 5-7, 13-14, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (US 6,421,466) in view of Lam et al (US 6,888,943).

As per **claim 2**, Lin discloses the method of claim 23 wherein said first frame is a current frame (Fig 4, current pic) and said second frame is previous frame (Fig 4, Old pic; Col 5 Ln 45-50).

As per **claim 3**, Lin discloses the method of claim 23 further comprising loading said reference macro block's data values (Fig 4, 52) into a register (Fig 5, 92) prior to said taking (Col 7 Ln 19-31).

As per **claim 5**, Lin discloses the method of claim 3 further comprising loading said search window's data values (Fig 4, 42) into a random access memory prior to said taking the absolute difference (Col 7 Ln 19-31).

As per **claim 6**, as best understood by the examiner, Lin discloses the method of claim 5 wherein said reference marcoblock's data values (Fig 4, 52) are uncompressed when said loaded and said search window's data values are uncompressed when loaded (Fig 6, Col 7 Ln 40-51).

As per **claim 7**, as best understood by the examiner, Lin discloses the method of claim 1 further comprising determining which N bits from:

1) said reference macroblock's data value's M bits (Fig 4, 52; Col 8 Ln 15-23; data value has been considered to be an 8-bit pixel value)

2) said search window macro block's data value's M bits (Fig 4, 42) are to be used for said taking the absolute difference (Col 8 Ln 15-23; the prior art discloses M=8 bits having been reduced to N=6 bits for the absolute difference calculation).

Regarding **claim 13**, arguments analogous to those presented for claim 1 are applicable for claim 13.

Regarding **claim 14**, arguments analogous to those presented for claim 2 are applicable for claim 14.

Regarding **claim 15**, arguments analogous to those presented for claim 11 are applicable for claim 15.

Regarding **claim 16**, arguments analogous to those presented for claim 11 are applicable for claim 16.

Regarding **claim 17**, arguments analogous to those presented for claim 8 are applicable for claim 17.

As per **claim 23**, Lin discloses a method, comprising:

a) taking the absolute difference of:

1) less than all of the bits of an uncompressed video data value from a reference macro block (Fig 4, 52);

2) less than all of the bits of an uncompressed video data value from a macro block worth of data within a search window (Fig 4, 42; Col 5 Ln 45-50);

b) calculating a sum of absolute differences between corresponding data values within said reference macro block (Fig 4, 52) and said macro block worth of data (Fig 4, 42), said absolute difference being one of said absolute differences (Col 6 Ln 60 – Col 7 Ln 7); and

c) calculating a motion vector based upon the position of said reference macro block (Fig 4, 52) in a first frame and the position of said macro block worth of data (Fig 4, 42) in said second frame, said sum of absolute differences being a lowest sum of absolute amongst other sums of absolute differences calculated between said reference macro block (Fig 4, 52) and other macro blocks worth of data (Fig 4, 42) within said search window (Col 7 Ln 1-17).

As per **claim 24**, Lin discloses an apparatus, comprising:

a) logic circuitry to take an absolute difference between:

1) less than all of the bits of an uncompressed video data value from a reference macro block (Fig 4, 52);

2) less than all of the bits of an uncompressed video data value from a macro block worth of data within a search window (Fig 4, 42; Col 5, Ln 35-50);

c) a register (Fig 5, 92) to store said reference macro block (Fig 4, 52), said register coupled to said logic circuitry (Fig 7, Ln 19-31); and

d) a random access memory to store said search window said random access memory (Fig 5, 92) coupled to said logic circuitry (Col 7 Ln 19-31).

As per **claim 25**, Lin discloses the method of claim 1, including: taking an absolute difference between data values of macroblocks (column 6 lines 52-55).

However, Lin does not explicitly teach including:

taking an absolute difference between data values of macroblocks by masking a number of most significant bits of said data values; and

calculating the number of most significant bits to mask.

In the same field of endeavor, Lam teaches by masking a number of most significant bits of data values; and

calculating the number of most significant bits to mask (Fig 5 element 535; column 7 lines 32-37).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Lin in view of Lam. The advantage would be providing multimedia at a desired quality level (see abstract).

10. Claims 8, 9, 11, 12, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (US 6,421,466) in view of Lam et al (US 6,888,943) in further view of Pourreza et al ("Weighed Multiple Bit-Plane Matching, A Simple and Efficient Matching Criterion for Electronic Digital Image Stabilizer Application).

As per **claims 8 and 17**, Lin discloses the method of claims 8 and 17, wherein said determining comprises:

determining the number of most significant bits that are to be masked from both said data values (Col 8 Ln 15-18);

Lin does not disclose determining the number of least significant bits that are to be masked from both said data values.

In the same field of endeavor, Pourreza et al teaches reducing the complexity of block matching criterion by truncating different combination of the bits of 8-bit pixels that includes masking a number of most significant bits or less significant bits accomplished on SSD, SAD, MPDC, BPROP, sub-sampled BPROP or BPROPS (4 to 1 sub-

sampling), Ko method (by using $b_1b_2b_3b_4$, $b_2b_3b_4b_5$, $b_3b_4b_5b_6$ and $b_4b_5b_6b_7$ bits) matching criteria(Fig 3 Section 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to integrate the method of Lin with the method of Pourreza et al. The advantage of the integration is that it will reduce the complexity of block matching process and has the best performance than other 1 bit-per-pixel algorithms (Pourreza, Section 5).

As per **claim 9**, as best understood by the Examiner, Lin discloses the method of claim 8 wherein said determining the number of least significant bits is (N-M)-(said determined number of most significant bits) (Col 8 Ln 15-23; the prior art teaches selecting 6 bits as the most significant bits, which represents using N=6 bits from 8-bit pixels, and therefore the leftover bits will represent the least significant bits).

As per **claims 11, 15, and 16**, Lin disclose the method and apparatus of claims 9, further comprising adding an offset value to said reference macro block's uncompressed video data value and said search window macro block's uncompressed video data value (Col 3 Ln 51-65, generating images with reduced_width level pixel data will add an offset to the pixel values and change the optical resolution of the reference and search window macroblocks).

As per **claims 12**, Lin discloses the method of claim 11 wherein said offset is set equal to a minimum valued uncompressed video data value of said reference macro

block (Col 3 Ln 51- Col 4 Ln 14; the prior art discloses reducing pixel values to a reduced_width level 4 image, which is the minimum and is used as an offset).

## *Allowable Subject Matter*

1. Claim 10 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

## *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHIKAODILI E. ANYIKIRE whose telephone number is (571)270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2621
/Chikaodili E Anyikire/
Patent Examiner AU 2621